

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 July 2006 (27.07.2006)

PCT

(10) International Publication Number
WO 2006/078987 A3

(51) International Patent Classification:
A61K 51/00 (2006.01)

(21) International Application Number:
PCT/US2006/002186

(22) International Filing Date: 23 January 2006 (23.01.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/646,018 22 January 2005 (22.01.2005) US

(71) Applicants and

(72) Inventors: ORAEVSKY, Alexander [RU/US];
755 Langwood Drive, Houston, Texas 77079 (US).
LAPOTKO, Dmitri [BY/BY]; 87 Brestskaya Street, Apt.
151, Minsk, 220099 (BY).

(74) Agent: ADLER, Benjamin; Adler & Associates, 8011
Candle Lane, Houston, Texas 77071 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI,
NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,
SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US,
UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT,
RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

(88) Date of publication of the international search report:
11 January 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



WO 2006/078987 A3

(54) Title: LASER ACTIVATED NANOTHERMOLYSIS OF CELLS

(57) Abstract: Provided herein is a method and system to increase selective thermomechanical damage to a biological body, such as a cancer cell. The biological body or cancer cell is specifically targeted with nanoparticles comprising one or more targeting moieties and effective to form nanoparticulate clusters on or within the biological body or cell. Pulsed electromagnetic radiation having a wavelength spectrum selected for a peak wavelength near to or matching a peak absorption wavelength of the nanoparticles selectively heats the nanoparticles resulting in selective and increased thermomechanical damage to the biologic body or cells without affecting any surrounding medium or normal cells or tissues. Also provided is a method of treating leukemia using the methods and system described herein.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US06/02186

A. CLASSIFICATION OF SUBJECT MATTER

IPC: A61K 51/00(2006.01)

USPC: 514/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 514/44

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WEST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,165,440 A (ESENALIEV) 26 December 2000 (26.12.2000), see the entire document.	1-41

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search
06 August 2006 (06.08.2006)

Date of mailing of the international search report
31 AUG 2006

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (571) 273-3201

Authorized officer
Michael Hartley
Telephone No. 00

